CLAIMS

What is claimed is:

1. A method for removing aldehydes from a waste stream comprising the step of:

a) contacting the waste stream containing the aldehyde with a solid primary amine thereby binding the aldehyde to the solid primary amine.

2. The method of claim 1, wherein the aldehyde comprises a dialdehyde.

3. The method of claim 2, wherein the aldehyde comprises glutaral dehyde.

4. The method of claim 2, wherein the dialdehyde comprises *ortho*-phthalaldehyde.

5. The method of claim 1, wherein the aldehyde comprises formaldehyde.

6. The method of claim 1, wherein the solid primary amine is a solid chemical comprises at least one primary amino group.

7. The method of claim 6 wherein the solid primary amine is in the form of an aminated surface having primary amine functionality.

8. The method of claim 7, wherein the aminated surface comprises the primary amine chemically bonded to a silica supporting material.

9. The method of claim 8 wherein the aminated surface is silica covalently bonded with an amino-silane.

10. The method of claim 9 wherein the amino-silane is selected from the group consisting of 3-aminopropyltrimethoxysilane, 3-aminopropyltriethoxysilane, N-(2-aminoethyl)-3-aminopropyltriethoxy silane, and mixtures thereof.

11. The method of claim 8, wherein the aminated surface is derived from an epoxy-silane compound and an amine having at least two primary amine moieties.

12. The method of claim 11, wherein the epoxy-silane is selected from the group consisting of 3-glycidyloxypropyltrimethoxysilane and 2(3,4-epoxycyclohexyl)ethyltrimethoxysilane and mixtures thereof and the amine is hexamethylenediamine.

13. The method of claim 8, wherein the aminated surface is derived from isocyano-silane or isothiocyano-silane compounds and an amine having at least two primary amine moieties.

14. The method of claim 13, wherein the isocyano-silane or isothiocyano-silane is selected from the group consisting of (3-isocyanatopropyl)triethoxysilane, (3-isothiocyanatopropyl)trimethoxysilane, and mixtures thereof, and the amine is selected from the group consisting of diamines, triamines and dendrimer amines.

15. The method of claim 14, wherein the amine is hexamethylenediamine or tris(2-aminoethyl)amine.

16. The method of claim 7, wherein the aminated surface comprises synthetic or natural polymers having primary amine functionality.

17. The method of claim 16, wherein the aminated surface is a polymer comprising tris(2-aminoethyl)amine or diethylenetriamine.

18. The method of claim 17, wherein the polymer is poly(styrene-co-divinylbenzene) or a peptide resin.

19. The method of claim 16, wherein the aminated surfaces are selected from the group consisting of aminated polysaccharides, chitosan, and mixtures thereof.

20. The method of claim 19, wherein the aminated surface is aminated dextran.

21. The method of claim 7, wherein the aminated surface is silica-polyallyamine intercalate.

22. A device for removing aldehydes from a waste stream comprising:

a) a container with an inlet and an outlet; and

b) a source of solid primary amine enclosed within the container, wherein the solid primary amine neutralizes and removes the aldehyde from the waste stream.

23. The device of claim 22, wherein the solid primary amine is a solid chemical comprising at least one primary amino group.

24. The device of claim 23, wherein the solid primary amine is in the form of an aminated surface having primary amine functionality.

25. The device of claim 23, wherein the aminated surface comprises the primary amine chemically bonded to a silica supporting material.

26. The device of claim 25, wherein the primary amine is a polymer or co-polymer comprising a primary amino group.

27. The device of claim 26, wherein polymer or co-polymer comprises tris(2-aminoethyl)amine linked to poly(styrene-co-divinylbenzene) or diethylenetriame linked to a peptide resin.

~~28.~~ The device of claim 24, wherein the aminated surfaces are selected from the group consisting of animated polysacharides, chitosan, and mixtures thereof.

29. The device of claim 24, wherein the aminated surface is silica-polyallyamine intercaclate.

30. The device of claim 24, wherein the aminated surface is aminated dextran.

31. The device of claim 22 further comprising a valve to control the flow of the waste stream.